

Nitrosodiethanolamine  
(NDELA)

- 1967      Druckrey *et al.* showed *N*-Nitrosodiethanolamine to be a hepatic carcinogen in rats. [1]
- 1977      Scheltz, Abidi and Hoffmann reported the isolation of *N*-nitrosodiethanolamine from tobacco. [2]
- 1978      Data reviewed by the IARC indicated that NDELA induced carcinoma of the trachea in hamsters. [3]
- 1979      McMahon *et al.* found NDELA to be mutagenic. [4]
- 1980      Lijinsky *et al.* reported that NDELA induced carcinoma of the kidney and liver in rats. [5]
- 1981      Brunnemann and Hoffmann reported that the mainstream smoke of tobaccos treated with the sucker growth inhibitor maleic hydrazide diethanolamine contained 10 to 40 nanograms per cigarette of NDELA. [6]
- 1982      The U.S. Surgeon General concluded that NDELA is a carcinogen, noting that NDELA had been shown to induce carcinoma of the kidney and liver in rats and carcinoma of the trachea in hamsters and is found in tobacco treated with maleic hydrazide diethanolamine. [7]
- 1982      The Third Annual Report on Carcinogens notes that "there is sufficient evidence for the carcinogenicity of NDELA in experimental animals." [8]
- 1985      The International Agency for Research on Cancer notes that NDELA's "presence in tobacco products related to the use of the sucker-growth inhibitor maleic

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hydrazide for which one formulation included diethanolamine salt ('MH-30'). In the USA, that formulation has been replaced with the potassium salt.... [I]t has been shown that tobacco grown in a pesticide-free environment and smoke generated from such tobaccos are devoid of NDELA." [9]

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### References

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- [7] U.S. Public Health Service, *The Health Consequences of Smoking: Cancer. A Report of the Surgeon General* (1982).
- [8] National Technical Information Service, *Third Annual Report on Carcinogens*, 197 (1982).
- [9] International Agency for Research on Cancer, *Tobacco Smoking*, IARC Monograph 38 (1985 Draft).

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